

RE ATTORNEY DOCKET NO. 513.1162USN 3/22/07 - 2 -

In the claims:

Please amend the claims as shown below:

- 5 1. (Original) A grinding apparatus for grinding the working
tips of hard metal inserts of rock drill bits, said grinding
apparatus having a grinding machine, means for holding the
rock drill bits to be ground and a support system, said
support system including means to provide a feed pressure for
10 said grinding machine during grinding, said grinding machine
adapted to be equipped with a grinding pin driven by a motor
to rotate about its longitudinal axis wherein the grinding cup
is rotated at controlled variable speeds and the support
system provides a controlled variable feed pressure.
- 15 2. (Original) A grinding apparatus according to claim 1
wherein the speed of rotation of the grinding cup and feed
pressure may be varied during a grinding cycle of a working
tip on a rock drill bit.
- 20 3. (Previously presented) A grinding apparatus according to
claim 1 wherein the grinding cup is rotated at variable speeds
from about 2200 to 6000 RPM and the support system provides a
variable feed pressure up to 350 KG.
- 25 4. (Original) A grinding apparatus according to claim 1
wherein the grinding machine utilizes an electric motor
capable of producing high torque over a range of RPMs, with a
relatively compact size and weight.
- 30 5. (Original) A grinding apparatus according to claim 4
wherein a frequency inverter is provided between the electric
motor and the electric power source.

RE ATTORNEY DOCKET NO. 513.1162USN 3/22/07 - 3 -

6. (Previously presented) A grinding apparatus according to claim 4 wherein said electric motor is water-cooled.

5 7. (Original) A grinding apparatus according to claim 6 wherein a coolant may be provided to the surface of the hard metal inserts during grinding through one or more outlets in said grinding cup and said electric motor is cooled with the same coolant.

10

8. (Original) A grinding apparatus according to claim 1 wherein a rotation motor and bearing arrangement are provided on said support system for providing an orbital rotation to the grinding machine around the longitudinal axis of the hard metal insert.

15

9. (Original) A grinding apparatus according to claim 5 wherein the frequency inverter is a compact solid-state frequency inverter.

20

10. (Original) A grinding apparatus according to claim 1 wherein said support system includes an arm or lever system for carrying and positioning the grinding machine and said arm or lever system is journaled onto a stand.

25

11. (Original) A grinding apparatus according to claim 10 wherein said arm or lever system has a first arm section having a first end journaled to said stand wherein said first arm section controls the horizontal location of the grinding machine relative to the drill bit to be ground.

30

12. (Original) A grinding apparatus according to claim 11 wherein said arm system has a second arm section having a first end adapted to be connected to a second end of said first arm section, and wherein the second arm section controls

35

RE ATTORNEY DOCKET NO. 513.1162USN 3/22/07 - 4 -

the vertical movement of the grinding machine up and down.

13. (Original) A grinding apparatus according to claim 1
wherein said grinding apparatus has a self centering grinding
5 machine and said support system permits movement of the
grinding machine horizontally and vertically relative to the
longitudinal axis of the hard metal inserts of the rock drill
bit to be ground to align the grinding machine with the
longitudinal axis of the hard metal insert to be ground
10 wherein biasing means are provided on said support system to
provide a biased side load substantially perpendicular to the
longitudinal axis of the hard metal insert of the bit to be
ground to the grinding machine or bit during grinding to
maintain alignment of the grinding machine with the
15 longitudinal axis of the hard metal insert to be ground.

14. (Original) A grinding apparatus according to claim 13
wherein said support system comprises a frame and an arm or
lever system having a first arm section with a first end
20 journaled on said frame for adjustment of said grinding
machine normal to the longitudinal axis of the hard metal
insert to be ground and wherein the means for providing a
biased side load to said grinding machine consists of a
cylinder having one end connected to said frame and the other
25 end connected to said first arm section.

15. (Original) A grinding apparatus according to claim 14,
wherein said support system includes means for providing a
balance pressure when the grinding machine is not in use and
30 feed pressure when in use.

16. (Original) A grinding apparatus according to claim 15
wherein said support system includes a second arm section.

35 17. (Original) A grinding apparatus according to claim 16

RE ATTORNEY DOCKET NO. 513.1162USN 3/22/07 - 5 -

wherein the means for providing a balance pressure includes a cylinder connected to the second arm section.

18. (Original) A grinding apparatus according to claim 17,
5 wherein said second arm section has an upper and lower
parallel arm with a first end of each arm pivotally mounted to
a front side of a first box section, a second end of each arm
is pivotally connected to a back side of a second box section
10 wherein the means for providing a balance pressure to said
second arm section includes a cylinder connected to the first
end of the lower arm said first end of said lower arm
extending out from a pivot point at which the lower arm is
connected to the first box section.

19. (Previously presented) A grinding apparatus according to
15 claim 13 wherein the means for holding one or more rock drill
bits to be ground includes a table with one or more apertures
to hold one or more rock drill bits to be ground, said table
tiltably mounted within a box or frame and means to control
20 the tilting action of said table.

20. (Original) A grinding apparatus according to claim 19
wherein the means to control the tilting action of the table
consists of an arced slot provided in a side of the box, a
25 linear actuator provided on a side of the box and having an
actuator rod with a remote end of the actuator rod is
connected to a side of the table through said slot wherein
extension of the actuator rod will tilt the table.

21. (Previously presented) A grinding apparatus according to
30 claim 19 wherein means are provided to lock a bit within said
aperture and means to partially release the pressure to permit
the bits to be rotated without full release of the locking
means.

35

RE ATTORNEY DOCKET NO. 513.1162USN 3/22/07 - 6 -

22. (Previously presented) A grinding apparatus according to claim 19 wherein the cylinder providing a biased side load is automatically activated when the table is tilted.

5 23-38. (Canceled)